

**United States House of Representatives
Small Business Committee's
Subcommittee on Rural and Urban Entrepreneurship**

**Hearing on
"Second Generation Biofuels: The
New Frontier for Small Businesses."**

**Testimony of Tom Todaro
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Good morning Chairman Velazquez, Ranking Member Chabot, and Members of the Committee. My name is Tom Todaro. I am the CEO of Targeted Growth, a biotechnology company focused on the development of low-input, high-output dedicated energy crops. We are located in Seattle, Washington.

The biofuels industry, particularly traditional corn-based ethanol, has come under significant attack over the past few months. Biofuels are being blamed for everything from increased national food prices to global food shortages. There are many factors contributing to increased food prices, including higher energy prices, expanding market demand in India and China and drought in Australia. Increasing demand on corn and soybeans for biofuel production is just one small contributor.

I am not here to defend the current U.S. biofuel industry. I am here to explain how biofuels produced from next-generation, non-traditional feedstocks can meet the goals of stimulating rural economies, reducing reliance on imported oil, and decreasing greenhouse gas emissions. These new energy feedstocks will also help alleviate any competition between biofuel production and our food supply.

Targeted Growth is undertaking pioneering work on three energy feedstocks: sugar corn, camelina and algae. With each of these feedstocks, we look to isolate certain desirable gene traits, and then undertake a selective breeding process that enables us to grow a better plant.

Sugar Corn

Last year, the U.S. ethanol industry produced 6.5 billion gallons of ethanol using corn as a feedstock. In Indiana, the heart of the U.S. Corn Belt, a farmer can expect an average yield of about 145 bushels of corn per acre. Targeted Growth's sugar corn is very different from what we currently grow in the United States. The plant traces its origins to Peru. It does not have a cob or kernels. Instead, sugar corn has an extremely high sugar content, all of which is stored in the plant's stalk. Sugar corn requires less water or fertilizer than food corn, produces more biomass and produces more energy in its sugars. We are in the process of doing selective breeding with sugar corn to identify those gene traits that will promote high biomass as well as sugar yields and reduce cell wall recalcitrance – the fundamental building blocks of a specialized energy crop.

Our initial field test results demonstrate that sugar corn could improve biofuel yields on an acre of farm land by two to three times that of traditional corn. This is a potential game changer for the U.S. corn ethanol industry. It means that we can grow more dedicated energy feedstocks on less farm land. Ethanol production from sugar corn will have a dramatically higher energy balance and a significantly lower carbon footprint. Targeted Growth hopes to commercially launch sugar corn by 2011.

Camelina

Targeted Growth has developed a non-GMO oilseed called camelina that can be used to make biodiesel. Camelina is a member of the mustard seed family. It is well suited to cooler climates and can be grown in the Northern Great Plains States: Washington, Oregon, Montana, Colorado, North Dakota and Minnesota. It requires very low inputs of water, fertilizer and pesticides. Camelina can be grown as a rotational crop with wheat or on marginal land that is not currently in agricultural production. It has a short growing season and good direct harvestability.

Camelina has several distinct advantages over soybeans, the dominant biodiesel feedstock in the United States. First, camelina has a cost advantage of approximately 57 cents

per gallon over soybeans. Second, camelina is a dedicated energy feedstock. It does not compete in the food market. Finally, biodiesel produced from camelina has a very favorable carbon footprint.

Targeted Growth recently entered into a joint venture with Green Earth Fuels and created Sustainable Oils. Sustainable Oils will focus on the commercial introduction of camelina and aims to produce and market up to 100 million gallons of camelina-based biodiesel by 2010. This is the single largest U.S. contract for a dedicated biodiesel feedstock.

Prokaryotic Algae

The most speculative crop that Targeted Growth is currently working on is prokaryotic algae. It is also the crop that has the greatest potential to displace petroleum. Algae are single cell organisms. That means that they can only do one thing at a time. In the case of algae, it can either grow in mass or it can grow lipids, which contain oils that can be used to make biofuels. These two functions are biologically opposed to each other, which mean that algae is not a commercially viable energy feedstock.

Targeted Growth is using advanced genetics and high throughput screening to create robust high yield algae strains. Put simply, we have identified genetic markers in certain algae strains that we can either prompt to accelerate biomass growth or increase oil production. Our goal is to develop the ideal algae strain that can be cultivated in low cost pond systems. Algae requires carbon dioxide to grow, so we are in active discussions with potential utility partners to locate an algae facility adjacent to a coal fired electric generation facility. If this technology can be successfully proven and commercially developed, algae will emerge as a primary biofuel feedstock, as well as an efficient carbon capture technology.

Targeted Growth is bullish on the future of biofuels. However, there are a number of actions that Congress could take to help promote the long term success of this industry.

First, Congress needs to stand firm in its commitment to biofuels. This Congress took a bold step in passing an ambitious renewable fuel standard in the Energy Independence and Security Act of 2007. Requiring U.S. biofuel production to reach 36 billion gallons – one quarter of current U.S. petroleum consumption – by 2022 sends a strong signal to investors and developers that biofuels are more than a fad. Unfortunately, investor confidence is eroded when members of Congress clamor to suspend the RFS before the ink has barely dried on the U.S. Code.

Second, Congress needs to provide certainty to the industry. Like many fledgling industries, the biodiesel and cellulosic biofuels industries will require a tax subsidy for a few years until the industry has matured and realized basic efficiencies to drive down costs. Unfortunately, many of these tax subsidies are renewed on a year by year basis. I understand the political realities that drive this result, but the practical effect is that the tax credit is not as effective as it could be as investors are reluctant to commit capital when the tax credit that underpins the industry could go away. Congress needs to extend tax credits for at least three years at a time in order to provide certainty.

Third, Congress needs to invest in basic research and development to bring new energy feedstocks and new refining processes on line as quickly as possible. Biofuels will never be a sustainable, substantial source of energy if the industry remains focused on corn and soybeans. Competition for these crops will continue to drive up the price of biofuels and cause conflicts with competing users. The industry needs a diverse array of feedstocks that can all contribute toward the goal of 36 billion gallons of biofuel production. The recently passed Food, Conservation and Energy Act of 2008 will invest upwards of \$1 billion in bioenergy. This is a good start, but the industry needs much more. It is my hope that the new Congress and the next Administration will dramatically increase federal funding that is available to help support work being done by our national labs, universities and the private sector to develop the next generation of biofuels.

Thank you.